



**KISII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**

**FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE OF MASTER OF  
SCIENCE IN BIOMEDICAL SCIENCES**  
**FIRST SEMESTER, 2023/2024**  
**(MAY-AUGUST, 2024)**

**MBSM 822: CELLULAR AND MOLECULAR IMMUNOLOGY**

**STREAM: Y1S1**  
**DAY: MONDAY, 12.00-3.00PM**

**TIME: 3 HOURS**  
**DATE: 12/08/2024**

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**INSTRUCTIONS**

- 1. Do not write anything on this question paper.***
- 2. Answer question one and any other two questions.***

**QUESTION ONE**

Outline the applications of Antigen-Antibody Reactions in Immunology and Medical Diagnostics .

[20 Marks]

**QUESTION TWO**

a) Explain how a vast number of immunoglobulins of different antigen specificities can be produced from a relatively small number of genes present in the genome. [10 marks]

b) Describe the process of B-cell activation and potentials on increasing B cell receptor (BCR) antibody diversity for future infections. [10 Marks]

**QUESTION THREE**

Describe the structure and function of the major histocompatibility complex (MHC). [20 Marks]

**QUESTION FOUR**

Discuss the diagnostic features (25%), infectious complications (25%), treatment (25%), and molecular basis (25%) of X-linked agammaglobulinemia (XLA)

[20marks]